

REMARKS

Initially, the Examiner is respectfully requested to return an initialed copy of the Form PTO/SB/08 filed with Applicants' Disclosure Statement of March 1, 2004, and to indicate that the listed document has been considered and made of record.

In the present Amendment, Claim 1 has been amended to recite that the acidic compound is an aliphatic carboxylic acid and the basic compound is a nitrogen-containing organic base. Support for the amendment is found, for example, at page 4, lines 15-20 and page 5, lines 1-8 of the specification. No new matter has been added, and entry of the Amendment is respectfully requested.

Claims 1-5 are pending.

Claims 1-5 have been rejected under 35 U.S.C. § 112, first paragraph. It is asserted that the specification does not reasonably provide enablement for "a method for producing a 3-methylthiopropenal carried out with any acidic compound and any basic compound."

Without agreeing to the rejection, Claim 1 has been amended as noted above to recite that the acidic compound is an aliphatic carboxylic acid and the basic compound is a nitrogen containing base. Accordingly, Applicants submit that the claims now more clearly comply with the requirements of Section 112, first paragraph, and withdrawal of the § 112 rejection is requested.

Claims 1-5 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Blackburn et al. (US 5,705,675).

This rejection should be withdrawn because Blackburn et al. does not disclose or render obvious the present claimed invention, as defined by amended Claim 1.

Present Claim 1 relates to a method for producing a 3-methylthiopropenal in a continuous manner, the method comprising the step of supplying an acrolein and a methyl mercaptan together or sequentially with an acidic compound and a basic compound into a reaction system to react the acrolein with the methyl mercaptan,

wherein the basic compound is used in an amount of 0.3 mol or less per mol of the acidic compound, and

wherein the acidic compound is an aliphatic carboxylic acid and the basic compound is a nitrogen-containing organic base.

According to the present invention, by-products having high boiling points are advantageously suppressed. See, page 2, lines 9-12 of the specification.

Blackburn et al. is cited as teaching a catalytic process for the preparation of 3-(methylthio)propanal where the molar ratio of an organic base to acetic acid introduced into the reaction zone is from about 0.5 to about 2.0 (abstract and col. 6, lines 19-21).

However, in the presently claimed invention, the basic compound is used in an amount of 0.3 mol or less per mol of the acidic compound.

Blackburn et al.'s molar ratio range of the organic base to acetic acid is well outside the presently claimed range. Further, there is no reasonable rationale for one skilled in the art to modify Blackburn et al.'s molar ratio of organic base to acetic acid to arrived at the present claimed invention.

Accordingly, the present claims are not obvious over Blackburn et al.

Further, the presently claimed ratio of the basic compound with respect to the acidic compound provides unexpectedly superior results which rebuts any possible prima facie case of

obviousness and confirms the patentability of the present claimed invention, as shown by the Examples and Comparative Examples of the present specification.

Specifically, in Example 1 of the specification, a mixture of an acetic acid and a pyridine having a molar ratio of acetic acid/pyridine of 1/0.13 was employed. The resulting percentage of the by-product with high boiling point, 3-hydroxy-2-methylthiomethyl-4-pentenal, is 0.24 % and the resulting percentage of the by-product with high boiling point, 2-methylthiomethyl-5-methylthio-2-pentenal, is 0.06%. In Example 2 of the specification, a mixture of an acetic acid and a pyridine having a molar ratio of acetic acid/pyridine of 1/0.15 was employed. The resulting percentage of 3-hydroxy-2-methylthiomethyl-4-pentenal is 0.23 % and the resulting percentage of 2-methylthiomethyl-5-methylthio-2-pentenal is 0.06 %.

In contrast, in Comparative Examples 1 and 2 of the specification, a mixture of an acetic acid and a pyridine having a molar ratio of acetic acid/pyridine of 1/0.51 was employed. In Comparative Example 1, the resulting percentage of 3-hydroxy-2-methylthiomethyl-4-pentenal is 0.73 % and the resulting percentage of 2-methylthiomethyl-5-methylthio-2-pentenal is 0.10%. In Comparative Example 2, the resulting percentage of 3-hydroxy-2-methylthiomethyl-4-pentenal is 0.41 % and the resulting percentage of 2-methylthiomethyl-5-methylthio-2-pentenal is 0.12%.

That is, Comparative Examples 1 and 2 demonstrate that the processes thereof result in higher percentages of the by-products having high boiling point, 3-hydroxy-2-methylthiomethyl-4-pentenal and 2-methylthiomethyl-5-methylthio-2-pentenal, compared to Examples 1 and 2.

One of ordinary skill in the art would not have predicted or expected that the presently claimed amount of the basic compound with respect to the acidic compound would have provided for superior (i.e., reduced) amounts of the by-products with high boiling point, 3-

hydroxy-2- methylthiomethyl-4-pentenal and 2-methylthiomethyl-5-methylthio-2-pentenal,
based on the teachings of Blackburn et al.

In view of the above, reconsideration and withdrawal of the §103(a) rejection based on
Blackburn et al. are respectfully requested.

Allowance is respectfully requested. If any points remain in issue which the Examiner
feels may be best resolved through a personal or telephone interview, the Examiner is kindly
requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue
Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any
overpayments to said Deposit Account.

Respectfully submitted,

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CUSTOMER NUMBER

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